Mr. Spring believes the average IQ of all of his students is 120. Karisma believes he is wrong and thinks his students are actually smarter. She took an SRS of seven of his students. The results of her survey are below. Is there statistically significant evidence at the significance level of .01 to believe Karisma?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Student** | A | B | C | D | E | F | G |
| **IQ** | 125 | 135 | 130 | 145 | 121 | 114 | 127 |

A bottle filling machine is set to dispense 16.2 ounces into juice bottles. To ensure that the machine is filling accurately, every hour a worker randomly selects six bottles filled by the machine in the past hour and measures the contents. If there is convincing evidence that the mean amount of juice dispensed is different from 16.2 ounces the machine will be shut down. It can be assumed that the amount of juice dispensed into bottles is normally distributed. During one hour, the mean number of ounces of six randomly selected bottles was 16.7 and the standard deviation was .84 ounces.

Perform a test of significance to determine if the mean amount of juice dispensed is different from 16.2 ounces.

Kyle is trying to determine if the average income of residents in Waterbury is correctly listed on Wikipedia. Wikipedia states that the average income of a Waterbury resident is 37,000. Kyle takes an SRS of 50 people in town and determines the average salary of those 50 people as 39,000. The standard deviation of the 50 people surveyed is 8250. Does the data conclude that the stated average income on Wikipedia is incorrect?

What if Kyle just wanted to find out if the data supports the fact that the TRUE average income is actually bigger than 37,000, what would the data suggest in this case? Assume the conditions for inference are met.

The NFL claims that all of its players have an average weight of 240 pounds. Terrance picked a random sample of 11 players from an alphabetical list and recorded their weight in the chart below. Terrance thinks the players in the NFL are bigger than 240 pounds on average. Does the evidence from Terrance’s sample support this claim?

Antonio Brown – 181

Ben Roethlisberger – 240

Cam Newton – 245

Greg Hardy – 280

Zack Martin – 315

Doug Baldwin – 189

Marshawn Lynch – 215

Will Tukuafu – 280

Vance Walker – 305

Darius Kilgo – 319

Demarcus Ware - 258